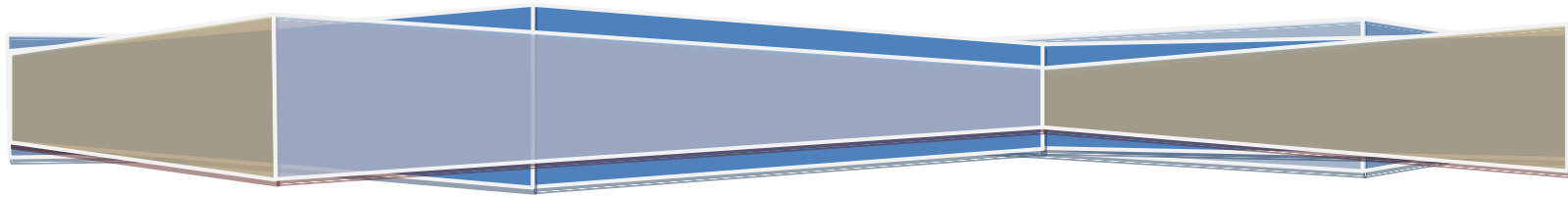


# Turner County Rural Development Site Analysis

A Study by  
South Eastern Council of Governments

Funded by the South Dakota Value Added Agriculture Subfund



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## Summary

### Program History

As part of the South Dakota Department of Agriculture's (SDDA) efforts to enhance economic development opportunities and better support local control of development, the County Site Analysis Program (Program) was developed in the summer of 2013. The Program assists participating counties in identifying potential rural properties with site development opportunities. The analysis and subsequent report will provide local leaders with information and research-based resources to foster well informed decisions regarding the future of their respective regions. It also helps identify and plan for potential challenges that may arise should those opportunities be pursued.

In implementing the Program, SDDA is working closely with South Dakota's Planning and Development Districts. The First District Association of Local Governments (First District) and Planning and Development District III (District III) developed a methodology for a feasibility analysis that focuses on identifying locations for rural economic development. The methodology addresses the feasibility of locations for the development of concentrated animal feeding operations, agricultural processing and storage facilities, and other agriculturally-related commercial/industrial development. The analysis takes into consideration local zoning and State permitting requirements along with the availability of infrastructure necessary to accommodate certain rural economic development projects.

The identification of each prospective site's relative advantages and constraints provides decision-makers with useful information for assessing the development potential of each site. The information contained herein has the potential to streamline the marketing process thereby reducing timelines, financial expenditures and labor costs. Local governments, landowners, economic development groups and state agencies such as the Department of Agriculture or Governor's Office of Economic Development all benefit from the rural site development analysis. These entities now have access to a marketing tool based on proactive planning efforts. In addition, the report may assist local governments in updating their comprehensive plans, zoning ordinances and permitting procedures while also increasing local awareness of potential development opportunities.

### Methodology

The methodology developed for this study utilized an established set of criteria deemed critical to further development of the subject properties while specifically addressing the suitability of a site for either a Concentrated Animal Feeding Operation (CAFO) or an Agriculturally-related Industrial Development (AID). **Table 1** lists the site assessment criteria identified as being necessary in order to conduct analysis of the potential sites. Minimum thresholds for each criterion were utilized to establish a hierarchy classification of "Good", "Better" and "Best" sites. Those sites designated as "Best" sites were those not limited by any of the criteria considered. Sites not meeting the minimum criteria required of the "Best" sites were subsequently identified as "Good" or "Better".

Specific information regarding the Site Assessment Criteria and methodology utilized for developing the "Good", "Better", and "Best" hierarchy may be found in **Appendix I and II**, respectively.

**Table 1: Site Assessment Criteria**

<b>CAFO/AID Criteria</b>
Access to County and State Road Network
Proximity to Three-phase Electricity Supply
Proximity to Rural Water System
Capacity of Rural Water System
Location of Shallow Aquifer
Existing Zoning Districts/Land Use Plans
Buildable Parcel
County CAFO Zoning Setback Requirements*
Proximity to Rural Residences* & Communities
Proximity to Rail**

\*CAFO Assessment Criteria Only

\*\* AID Assessment Criteria Only

### **Limiting Factors**

While this report focuses on the specific sites matching the site assessment criteria standards, it became apparent that each site also possesses its own unique set of site characteristics which present both advantages and constraints. For example, there are sites in the county which complied with the county's zoning regulations but lacked the necessary infrastructure.

The analysis found that the primary limiting factor(s) in reviewing the development potential of properties within Turner County for a "Better" or "Best" CAFO site development is the availability of quality potable water. The same is true with AID developments which also require a reliable water source of not only high quality but also large quantities. Access to a centralized water source such as rural water was a key criterion in the site analysis process. While access to quality water was identified as an impediment, the rural water systems noted that if a significant water user would locate in the county; they would explore ways to provide water to the proposed development. Therefore, the analysis does not conclude the only sites for CAFO/AID development in Turner County are relegated to the specific sites identified herein.

In addition to the availability of quality potable water, additional limiting factors such as access to County and State road networks, three phase power, rail, and the County's existing CAFO setback requirements limited the number of potential AID and CAFO sites.

The site assessment process was limited in scope to include undeveloped parcels and did not consider expansion of existing CAFOs or commercial/industrial uses. In addition to this limited scope, minimum values were utilized in ranking each site with regards to zoning requirements and infrastructure demands. No attempt was made to rank each site within the three identified classifications. The uniqueness of each criterion identified in **Table 1** warrants a comprehensive review of the potential impact each may have upon a subject property. This study is intended as the first step of a multi-faceted development process potentially leading to more specific site evaluations such as Phase 1 Environmental Assessments, engineering plans, and development cost analysis, etc.

## **Results**

Identifying and evaluating potential sites for development is the first step in planning for economic development in rural Turner County. The findings of this report will assist in determining the potential role each site may play in supporting economic development and should be considered when planning for future projects within Turner County.

Utilizing Geographic Information System (GIS) technology, the South Eastern Council of Governments identified **408** sites within Turner County that met the minimum site assessment standards of the CAFO analysis, **Table 2**, and **168** sites that met the minimum standards of the AID analysis, **Table 3**. These sites complied with local zoning ordinances and were in close proximity to infrastructure necessary to support the previously identified economic development activities.

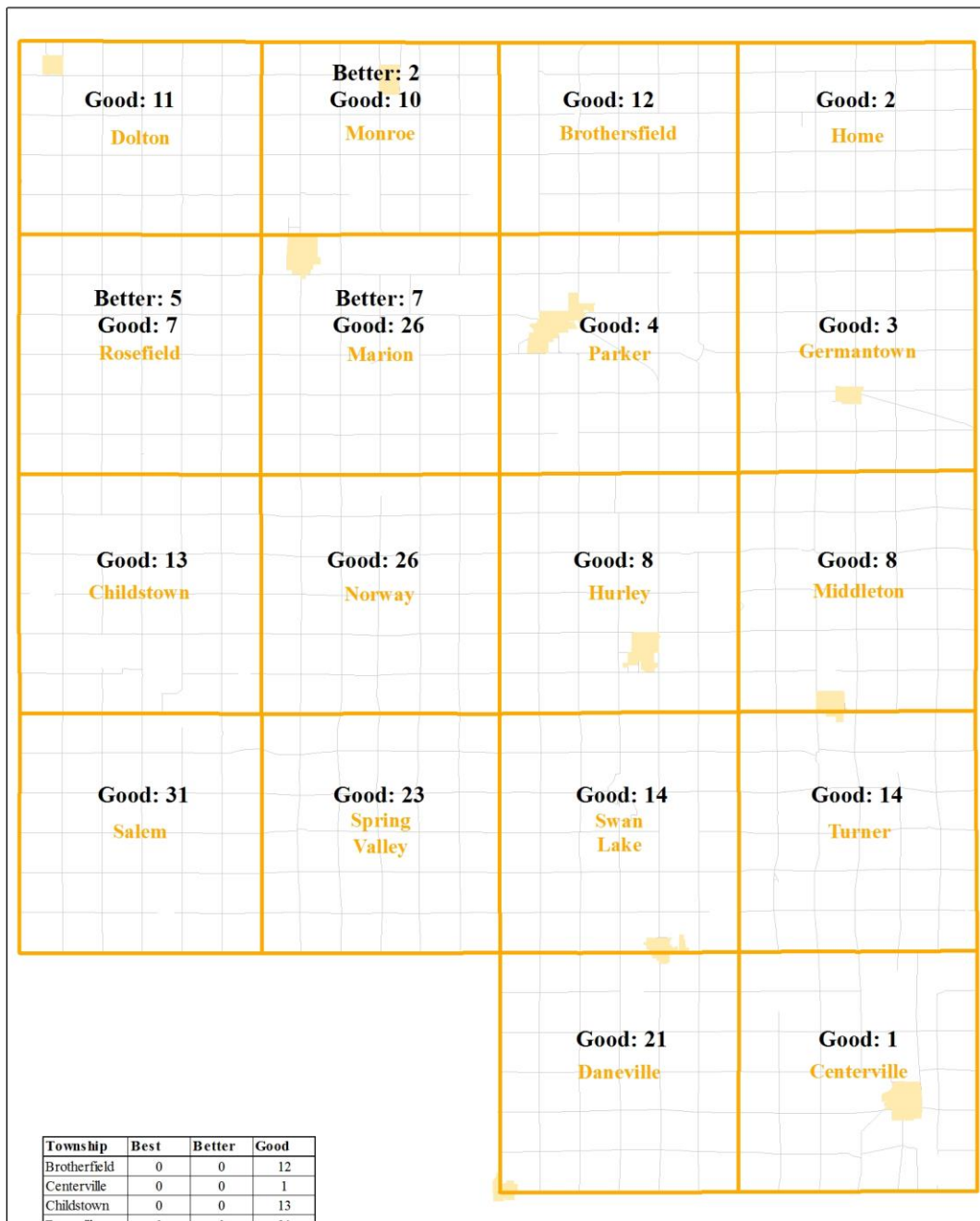
The CAFO and AID Analysis Maps further detail High Water Use (HWU) and Low Water Use (LWU) CAFO and AID sites. HWU CAFO sites are those locations which require 150,000 gallons of water per day. This amount of water is necessary to support, for example, a 3,000 head dairy. LWU CAFO sites are those locations which require 30,000 gallons of water per day, a volume necessary to support either a 600 head dairy or 5,000 head sow operation. HWU AID sites are those locations which require water at levels necessary to support high water uses such as food processing or ethanol production. The water requirement for a HWU AID site is 410,000 gallons of water per day. This high water use is currently unable to be supported by the rural water system. Therefore, no sites were found to be acceptable for HWU AID. LWU AID sites are those locations which require water at levels necessary to support most agriculturally-related commercial/industrial development, 30,000 gallons per day. The analysis identified **247** High Water Use and **408** Water Use CAFO sites and **0** High Water Use and **168** Low Water Use AID sites. The following maps provide information at a township level regarding the number of “Good”, “Better” and “Best” CAFO and AID sites.

**Table 2:**  
**Turner County CAFO Sites by Hierarchy Classification**

<b>CAFO Site Classification</b>	<b>Good Sites</b>	<b>Better Sites</b>	<b>Best Sites</b>
Low Water CAFO	365	42	1
High Water CAFO	233	14	0

**Table 3:**  
**Turner County AID Sites by Hierarchy Classification**

<b>AID Site Classification</b>	<b>Good Sites</b>	<b>Better Sites</b>	<b>Best Sites</b>
Low Water AID	168	0	0
High Water AID	0	0	0



Township	Best	Better	Good
Brotherfield	0	0	12
Centerville	0	0	1
Childstown	0	0	13
Daneville	0	0	21
Dolton	0	0	11
Germantown	0	0	3
Home	0	0	2
Hurley	0	0	8
Marion	0	7	26
Middleton	0	0	8
Monroe	0	2	9
Norway	0	0	26
Parker	0	0	4
Rosefield	0	5	7
Salem	0	0	31
Spring Valley	0	0	23
Swan Lake	0	0	14
Turner	0	0	14

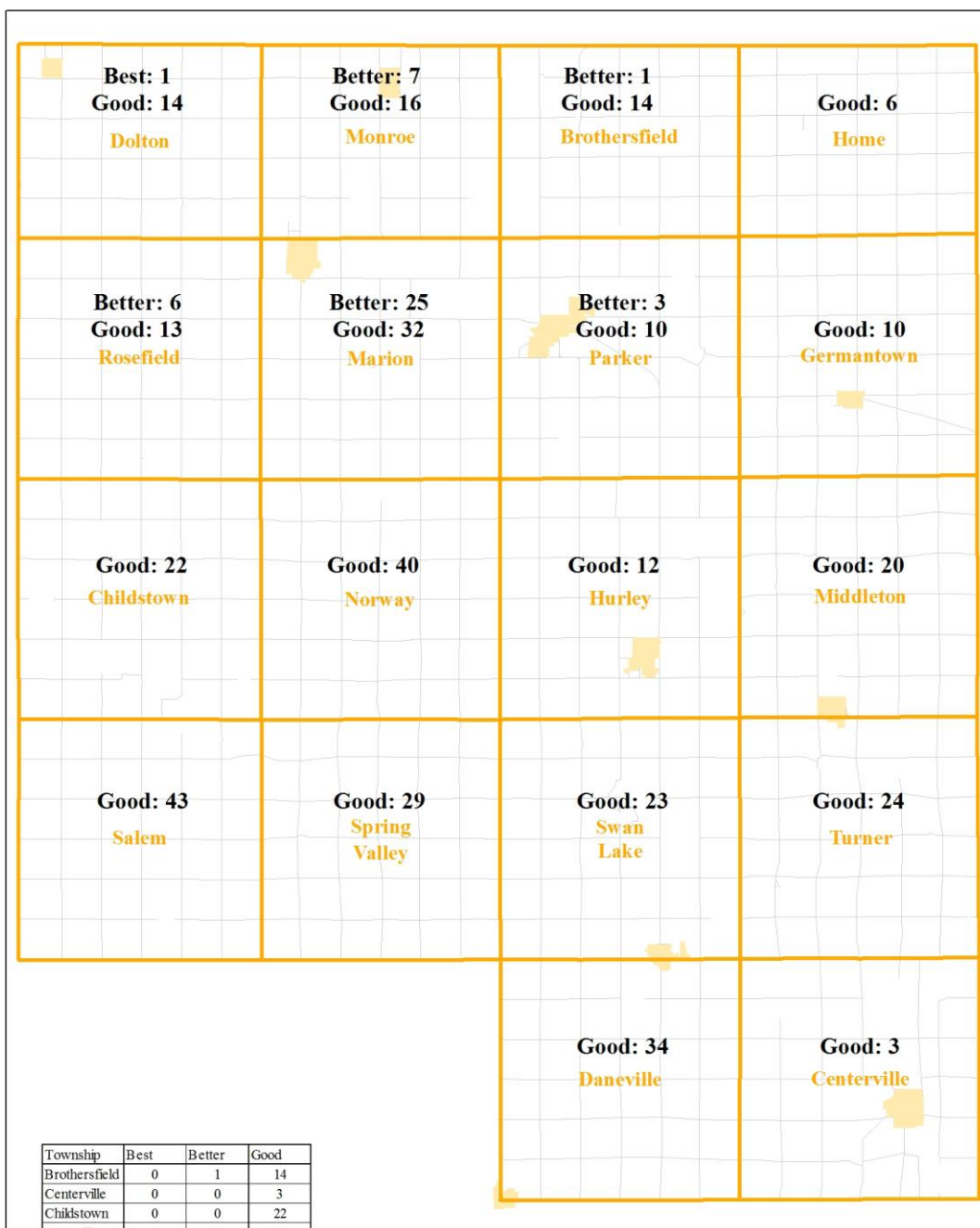
## Turner County

### High Water Use CAFO Development Sites 2015



Limit on liability: This information has been secured from sources we believe to be reliable, however, we do not guarantee the accuracy of the information contained herein. This map does not eliminate the need for an onsite investigation.

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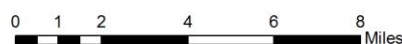


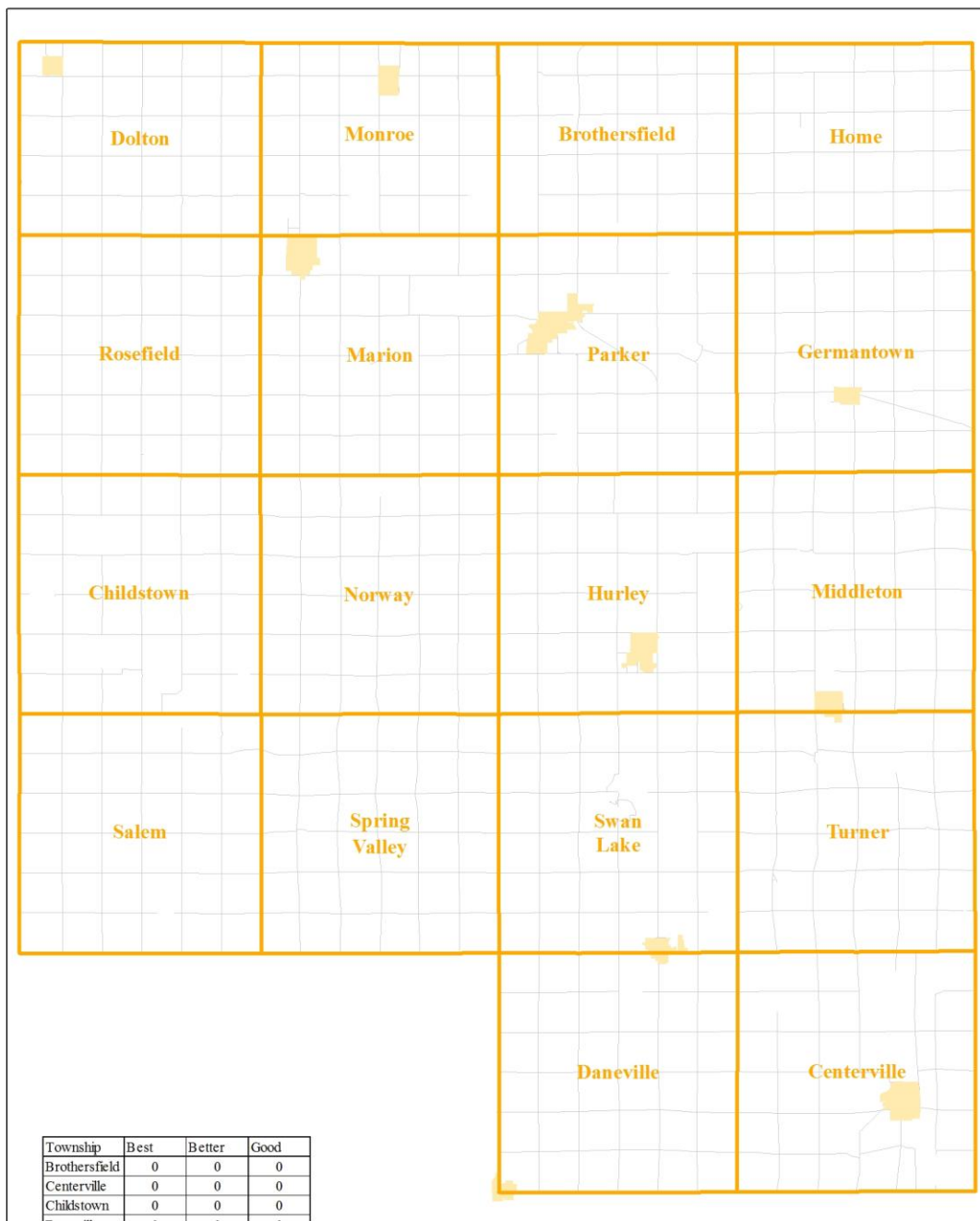
## Turner County

### Low Water Use CAFO Development Sites 2015



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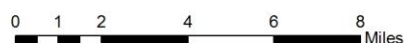


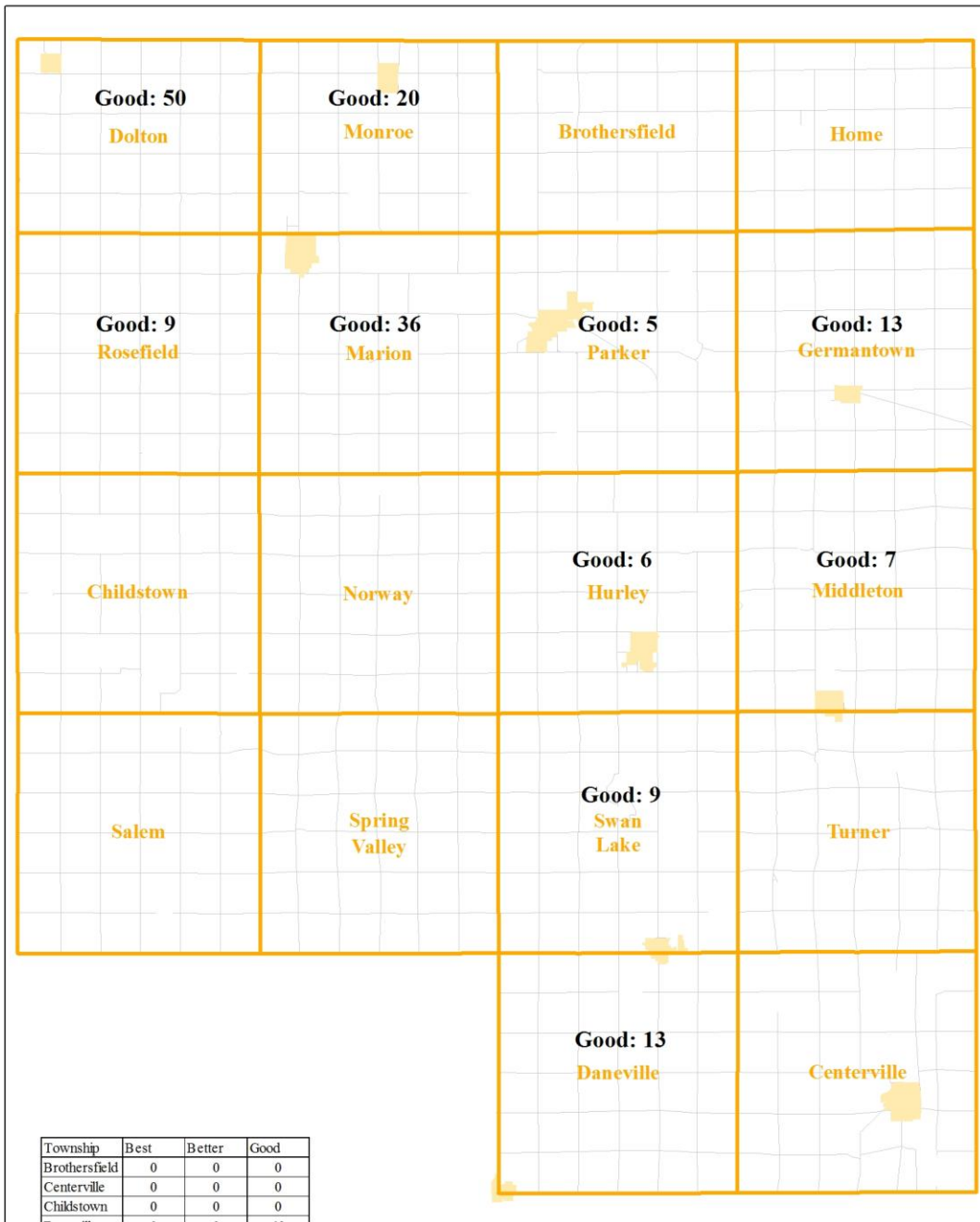
## Turner County

### High Water Use AID Development Sites 2015



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Township	Best	Better	Good
Brothersfield	0	0	0
Centerville	0	0	0
Childstown	0	0	0
Daneville	0	0	13
Dolton	0	0	50
Germantown	0	0	13
Home	0	0	0
Hurley	0	0	6
Marion	0	0	36
Middleton	0	0	7
Monroe	0	0	20
Norway	0	0	0
Parker	0	0	5
Rosefield	0	0	9
Salem	0	0	0
Spring Valley	0	0	0
Swan Lake	0	0	9
Turner	0	0	0

## Turner County

### Low Water Use AID Development Sites 2015

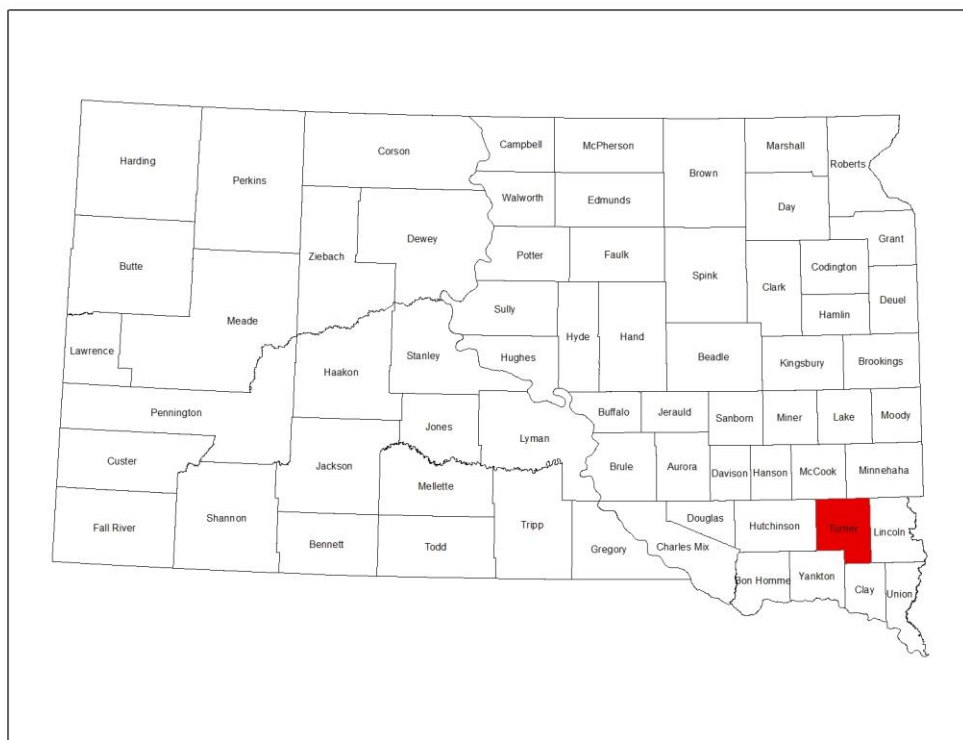
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the information contained herein. This map does  
not eliminate the need for an on-site investigation.

## APPENDIX I: SITE ASSESSMENT CRITERIA

### Turner County Location Map



The methodology developed for this study utilized an established set of criteria deemed critical to further the development of the subject properties while specifically addressing the suitability of a site for either a CAFO or an AID.

Sites possessing all of the criteria identified as critical within the analysis will be those most sought by potential developers. The occurrence of these sites may be somewhat rare. Therefore sites under consideration for either a CAFO or AID may meet the majority of criteria, but may also be lacking in several specific areas. Any sites not meeting all the criteria may be burdened with a limitation thus requiring more specific analysis. In these cases, the feasibility of developing the site is highly dependent upon the identified limitation(s).

A limiting condition could be the availability of water volume at an identified potential CAFO site. For example, the water demand for a 3,000 head dairy is approximately five times greater than the needs of a 5,000 head sow operation even though each operation could generally be subject to similar zoning regulations. In this situation, the lack of water at a volume necessary for a dairy may lend the site to be more likely identified as a possible location for a swine facility. It should be noted that neither this example nor the analysis explores potential alternatives to the absence of adequate rural water volume such as upsizing water distribution infrastructure or securing an alternative water source, all of which hold the potential to mitigate this constraint thereby facilitating the proposed development. Rather, the analysis recognizes upgrading infrastructure identified as necessary to support rural economic development projects may increase the number of developable sites within the County. In other cases, failure to meet certain criteria, such as access to a quality road network, may result in a situation where development of the site becomes economically unfeasible.

The site assessment criteria, depending upon whether or not the site is for a CAFO or AID project, have been divided into the three major categories of **Land Use Regulations**; **Environmental Constraints**; and **Infrastructure**.

## **LAND USE REGULATIONS**

Economic development planning in Turner County must be conducted in concert with the county's overall economic development goals. All development activities, including those specifically related to agriculture need to be accomplished within the parameters set forth in local and regional planning documents. Land use or development guidance is traditionally provided via local documents such as **Comprehensive Plans, Zoning Ordinances, Policies, Mission Statements** and other local economic development plans and initiatives. The analysis reviewed said documents in order to determine compliance with proposed CAFO and AID development. The following is a synopsis of Turner County's policies regarding CAFO and AID development.

### **Comprehensive Land Use Plan**

Turner County's most recent Comprehensive Plan was developed in 2007. The plan provides the following policies regarding animal agricultural development and commercial and industrial development.

### **CAFO Land Use Policies**

#### ***RURAL AREA***

The area designated on the Future Land Use Map as "Rural Area" has and is projected to continue as an agriculturally-dominated area. Both city residents and the farming community have a fundamental interest in preventing scattered and haphazard development patterns in this area. The limitation of future urban and rural conflicts is important to all citizens quality of life. Conflicts to be mitigated include increased noise, traffic, flooding, and erosion from storm drainage, road maintenance concerns, odors, and groundwater pollution from septic systems. The future land use plan encourages the majority of commercial and industrial development to locate within cities. However, it is recognized that convenience goods and services as well as some industrial uses could be appropriately sited within the rural area. These locations include existing service areas where some reasonable expansion is appropriate and at major highway intersections.

*GOAL: Preserve the rural area for agricultural production and open space.*

#### ***POLICIES***

- Preserve and protect the agricultural productivity of rural land by restricting the development of non-farm residential sites. Maintain a residential density of not more than one building site per quarter-quarter section.
- Discourage the splitting of land parcels into fragmented units which are incapable of supporting farming activities.

- Protect the rural area from uses which interfere and are not compatible with general farming practices.
- Allow the siting of agri-business activities at appropriate locations in the rural area.
- Discourage the random and haphazard siting of commercial and industrial uses within the rural area where such uses do not support the agricultural industry.
- Regulate concentrated animal feeding and processing operations to protect environmental quality and minimize conflicts with human activities while giving due regard to existing operations.
- Discourage development patterns that require public improvements financed in part by the farming community but which are not necessary to support agriculture.
- Construction of infrastructure improvements in the rural area should be directed at addressing existing service deficiencies and not to justify additional non-farm development.
- Work with the rural water systems to ensure that future water system improvements do not conflict with county development policies and the long term viability of agricultural operations.
- Maintain an inspection program to ensure proper installation of on-site wastewater disposal systems (septic tanks).
- Protect stream corridors, the aquifer, and other significant natural areas from incompatible development.
- Prevent construction on sites which are environmentally unsuited for buildings or septic systems.
- Within the framework of density zoning, every effort should be made to cluster residential uses and limit driveway approaches onto arterial and collector roads.
- Maintain an addressing system to create consistency for safety and convenience of businesses, visitors, and local citizens.
- Reduce visual clutter and safety hazards by encouraging aesthetic standards and design requirements to maintain and improve the county's visual appeal and image (including, but not limited to towers and signage.)

### Commercial/Industrial Land Use Policies

#### *TRANSITION AREA*

This area of urban development consists of lands along the urban fringe where new developments will occur through the year 2027 and the area where there is the greatest potential for rural and urban conflicts. This area is designated on the Future Land Use Map as "Transition Area". Development is expected to occur in this area during the planning period. The intent is to maintain clearly defined urban areas within the county. The following are goals and

policy guidelines which the Cities of Centerville, Chancellor, Hurley, Irene, Marion, Parker, and Viborg and Turner County can promote orderly and attractive growth of their future urban area.

*GOAL: Allow municipalities to plan for expansion within a clearly defined urban area.*

#### *POLICIES*

- Ensure future rural development does not detract from the implementation of municipal comprehensive plans. Recognize municipal growth plans when considering future development proposals.
- Encourage annexation and municipal utility extensions of all new development.
- To provide for orderly, efficient and economical development.
- Discourage leapfrog development on land which cannot be economically provided with public services and facilities.
- Maintain an adequate supply of development land within the transition area at all times.
- Require new developments be compatible with existing adjacent development.
- Require neighborhood and convenience commercial uses to be clustered at accessible locations.
- Avoid driveway entrances on arterial streets and wherever possible, on collector streets.
- Discourage heavy through traffic on minor residential streets.
- Preclude development of land which is environmentally unsuitable for construction.
- Provide convenient access to housing areas with a minimum of traffic hazards.
- Require continuity of collector streets between adjacent subdivisions.
- To maintain a distinction between rural areas and the cities and to preserve and enhance community identity.
- To support and encourage growth of the county's economic base and promote the expansion of job opportunities.
- Seek the input of municipal officials in the review of development proposals which could potentially impact future municipal expansion and public infrastructure projects.
- Encourage a pattern of development in transition areas which can be integrated into municipal planning areas without the need for costly and inefficient post development construction of public infrastructure expenditures.
- Enhance industrial development by restricting incompatible land uses in areas where rail access is available.

- Encourage new residential construction to locate on previously platted lots and other parcels which already qualify as building sites.
- Preserve and protect natural drainage systems within development areas. Storm water management plans for the entire drainage basin should be required as a prerequisite to development.
- Minimize soil erosion and siltation by requiring proper site preparation and construction techniques.
- Encourage an area-wide approach in the planning and construction of utility systems.

Turner County's Comprehensive Plan also includes land use location and design criteria for development in the County.

#### Land Use Location and Design Criteria

##### *Commercial/Industrial - Agriculturally related businesses*

- Adjacent to county and state highways.
- Rail access for industrial uses.
- Controlled access onto major roadways.
- Adequate buffering from neighboring uses.
- Convenient siting of commercial uses for customers.
- Hard surfaced driveways and parking areas.

##### *Special Uses - Intensive agricultural uses – Includes feed lots, animal confinement facilities.*

- Environmental impacts - aquifer protection, runoff, and land application of animal waste.
- Adequate separation from residences, churches, institutional uses, parks.

#### Zoning

Ideally, economic developers seek sites that are zoned and eligible for specific uses. The need to pursue a zoning change or conditional use permit introduces an additional step in the development process thus increasing development timeframes and costs. These steps or requirements also increase the uncertainty of approval given zoning changes are referable. Another issue is the super majority voting requirement necessary for a County's Board of Adjustment to approve a conditional use permit.

While the rural areas of Turner County are reserved for agricultural uses, certain agricultural uses may require a case by case review. Generally speaking, concentrated animal feeding operations are one of the aforementioned uses. It is important to emphasize agricultural producers must maintain flexibility in their operations. Grain farmers are now choosing to spread

their expenses over more acres to generate a small return over more acres. Like grain farmers, numerous livestock producers are choosing to accept smaller gains over larger numbers of animals to remain solvent. Turner County's leadership recognizes a diverse agricultural industry, relying on cash crop and animal agriculture, promotes a sustainable, balanced agricultural economy. Concentrated animal feeding operations further these goals as they create a demand for crops grown in the area, provide fertilizer for surrounding land, and yield a raw product which is, in some cases, directly sold to local residents.

#### Concentrated Animal Feeding Operation Setbacks

Turner County utilizes graduated setback requirements based upon the size of the CAFO. For example, a 3,000 head dairy is required to observe a minimum setback of **2,380 feet** from established residences, schools, churches, businesses, cemeteries and public use areas. As for setbacks from municipalities, the same 3,000 head dairy can be no closer than **6,080 feet**. This analysis also used a 5,000 head sow operation for the purposes of a low water use CAFO. The minimum setback from established residences, schools, churches, businesses, cemeteries and public use areas for this type of operation is **1,980 feet**. The same swine operation would be required to be setback **5,280 feet** from municipalities. Both the dairy and swine operations would also be required to be located at least **500 feet** from lakes, rivers and streams considered fisheries. Further all CAFO's are **prohibited in a designated 100 year flood plain**. The **408** Low Water Use and **247** High Water Use CAFO sites in the analysis are currently zoned in Turner County as agricultural and all or a portion of the legally described parcels, according to the best available data, further meet the required setback and lot area requirements.

#### Commercial/Industrial Development

There is very little concentrated or clustered commercial/industrial activity at the county level. Turner County's commercial and industrial properties are areas generally adjacent to county and state hard surface roads. Commercial and industrial activities located in rural areas are generally not conducive to municipal or populated locales.

#### Buildable Parcel

One criterion deemed necessary to facilitate development of either a CAFO or an AID was land area. A parcel of 40 buildable acres was set as the minimum for consideration within the analysis. In order to be considered, the property must have consisted of 40 contiguous acres and able to support development upon all 40 acres. Parcels without 40 buildable acres were not considered in the final analysis.

#### Proximity to Communities

The AID analysis also considered sites within one mile of a community or at specific locations identified by the County. This was done because many communities and counties have established growth plans for economic development within certain proximities of communities or at locations with existing infrastructure such as paved roads. Also since the parameters of the original AID analysis excluded all AID sites within counties without access to rail, the criterion of "proximity to a community" was defined as an adequate alternative for counties lacking rail facilities.

## **ENVIRONMENTAL**

The location of shallow aquifers in relation to potential development sites was included in the analysis. In reviewing shallow aquifers it is critical to note that they are included in the analysis for two distinct and very different reasons. Shallow aquifers may be utilized as a potential water source to support development. These same aquifers are also vulnerable to pollution due to their proximity to the surface and may be required to be protected via setbacks and development limitations.

Based upon Turner County's existing aquifer protection regulations, no site will be considered eligible if located over a shallow aquifer. However, sites can be considered for development if the applicant can show by appropriate soil borings that a site is appropriate for development.

The analysis did consider local zoning setbacks from waters identified as fisheries by the State of South Dakota.

Prior to or contingent upon acquiring a parcel it is assumed other environmental factors potentially affecting the property would be addressed via a Phase I Environmental Assessment or similar process. It is recommended that developers consider undertaking such an inquiry prior to executing a major commitment to a particular location over a shallow aquifer.

## **INFRASTRUCTURE**

The term infrastructure is broad though in the context of property development the term includes essential services such as water, sewer, electrical, telecommunications and roads. With regards to the rural site analysis process; access to quality roads, electrical capacity and water supply were deemed essential and identified as site selection criteria.

### **Transportation**

Access to quality roads was identified as critical to determining the development potential of a parcel. As such, the proximity of a potential development site to either a state or county road was established as one of the parameters in conducting the rural site analysis. The South Dakota Department of Transportation's road layer was used to identify roads and surface types. Sites accessed only by township roads that were located further than one mile from the intersection of a County or State surface road were eliminated from the analysis.

A potential development site's proximity to certain road types impacted its designation. Those parcels abutting hard surface roads were consistently ranked higher than those served by gravel roads. In reviewing CAFO and AID sites, parcels adjacent to a County or State hard surface road were designated "Better" or "Best" for transportation resources. Parcels adjacent to roads within one mile of an intersection with a County or State road network were designated "Good" for CAFO sites. Parcels within one mile of an intersection with a county/state hard surface road network were designated "Good" for AID sites.

Access to rail was also considered to be an important factor in locating an AID site. Parcels adjacent to rail facilities were designated "Best". Parcels within one-half mile of rail were designated "Better" and those parcels within one mile of rail were designated "Good". In addition, the analysis also considered sites within one mile of a community or at locations identified by the County, with or without rail. Those parcels within one mile of a municipality or

at locations identified by the County that met necessary requirements, except access to rail, were designated as “Good” and “Better”.

### Electric Supply

Access to three-phase power was designated as a site characteristics criterion for both CAFO and AID development. South Eastern Council of Governments contacted Southeastern Electric Cooperative to obtain the location and capacity of the three-Phase infrastructure within the county. All potential CAFO or AID developable parcels adjacent to a three-phase power were designated “Best” for electricity resources. Whereas, parcels within one mile of a three-phase power line were designated “Better” and those within two miles of a three-phase power line were designated “Good”.

### Water Supply

The ability to secure specific information regarding a rural water system’s operations to include storage, distribution, and capacities proved to be the most complex and difficult component of the infrastructure analysis. Due to this, water resources were evaluated differently than transportation and electric infrastructure. While transportation and electric infrastructure were classified based primarily upon proximity to roads and three-phase power, the analysis of rural water systems first required the evaluation of the water system, specifically, each system’s supply and distribution capacities.

Development sites were then were selected based upon the proximity to water service. The classifications with regards to water supply and their respective criteria are as follows:

#### 1. **“Best” Classification**

##### a. CAFO

- i. High Water Use CAFO Site - If the site was adjacent to or within an area where a rural water system had sufficient supply **and** distribution capacity to provide 150,000 gallons per day, the site area was designated as “Best” for water resources.
- ii. Low Water Use CAFO Site - If the site was adjacent to or within an area where a rural water system had sufficient supply **and** distribution capacity to provide 30,000 gallons per day, the site area was designated as “Best” for water resources.

##### b. AID

- i. High Water Use AID Site - If the site was adjacent to or within an area where a rural water system had sufficient supply **and** distribution capacity to provide 410,000 gallons per day, the site area was designated as “Best” for water resources.
- ii. Low Water Use AID Site - If the site was adjacent to or within an area where a rural water system had sufficient supply **and** distribution capacity to capacity to provide 30,000 gallons per day, the site area was designated as “Best” for water resources.

## 2. “Better” Classification

### a. CAFO

- i. High Water Use CAFO Site - If the site was within an area where a rural water system had either a sufficient supply or distribution capacity to provide 150,000 gallons per day, the site area was designated as “Better” for water resources.
- ii. Low Water Use CAFO Site - If the site was within an area where a rural water system had either a sufficient supply or distribution capacity to provide 30,000 gallons per day, the site area was designated as “Better” for water resources.

### b. AID

- i. High Water Use AID Site - If the site was within an area where a rural water system had either a sufficient supply or distribution capacity to provide 410,000 gallons per day, the site area was designated as “Better” for water resources.
- ii. Low Water Use AID Site - If the site was within an area where a rural water system had either a sufficient supply or distribution capacity to provide 30,000 gallons per day, the site area was designated as “Better” for water resources.

## 3. “Good” Classification

- a. In the event the rural water system had neither supply nor distribution capacity to serve either a “Better” or “Best” CAFO or AID as defined above, a “Good” designation for water resources was applied to those locations that were situated within two miles but no closer than one-half mile of a shallow aquifer. The designation as “Good” for water resources was not applied to High Water Use AID sites due to the water volume requirements of High Water Use AID sites and the lack of available data regarding the capacity of shallow aquifers.

The site analysis sought to address whether the rural water system serving the region had excess water treatment capacity (supply) as well as their ability to serve potential properties (distribution). In order to address the issue of supply the South Eastern Council of Governments requested location and capacity information from the two rural water providers within Turner County. T-M Rural Water provides rural water to the majority of the county. South Lincoln Rural Water System provides water to the east edge of the county, only coming into places where T-M cannot serve. Each system was requested to provide information regarding their available treated water capacity. In addition, each system was asked to notate on maps those geographic areas where distribution capacity existed which could provide water volumes at 30,000, 150,000, and 410,000 gallons per day, respectively.

T-M Rural Water confident that they could provide water to High Water CAFO sites along their lines in the northwest portion of the county in the area between Dolton and Marion with no or only minor improvements needed to their system. T-M Rural Water was very confident that they could provide water to Low Water CAFO sites located along their lines in north central Turner County between Dolton and Parker and up to Monroe with little or no improvements needed to their system.

South Lincoln Rural Water System stated that they would work with potential high water users in their supply area to determine the amount of water they are capable of delivering to a particular site. Turner County is at the farthest extent of their system and is mostly under the service of T-M Water.

There were no locations within either rural water distribution system that could accommodate the High Water Use AID site “Best” requirement of 410,000 gallons per day. However, T-M Rural Water did identify that locations along their pipeline between Dolton and Parker could be provided with water for Low Water AID sites requiring less than 30,000 gallons per day.

## APPENDIX 2: RESEARCH AND METHODOLOGY

This section describes the methodology utilized to evaluate the suitability of potential CAFO or AID development sites.

### Step 1: Identification of Site Assessment Criteria

**Table A1** lists the site assessment criteria identified as being necessary in order to conduct analysis of the potential sites. Utilizing these criteria as a guide, a variety of research methods were employed to compile the GIS data sets used in the analysis. This included the examination of local, regional, and state planning documents and existing GIS data layers.

**Table A1: Site Assessment Criteria**

CAFO Criteria	AID Criteria
Access to County and State Road Network	Access to County and State Road Network
Proximity to Three-phase Electricity Supply	Proximity to Three-phase Electricity Supply
Proximity to Rural Water System	Proximity to Rural Water System
Capacity of Rural Water System	Capacity of Rural Water System
Location of Shallow Aquifer	Location of Shallow Aquifer
Buildable Parcel	Buildable Parcel
Existing Zoning Districts/Land Use Plans	Existing Zoning Districts/Land Use Plans
Proximity to Rural Residences & Communities	Proximity to Communities
County CAFO Zoning Setback Requirements	Proximity to Rail

### Step 2: Evaluation of Site Assessment Criteria

After developing the data sets in **Table A1**, the analysis identified those site locations that:

1. Complied with zoning guidelines; and
2. Were in close proximity to infrastructure necessary to support either CAFO or AID development.

### **Concentrated Animal Feeding Operation (CAFO) Analysis**

The GIS analysis removed all parcels within the county from consideration that:

1. Were not within one mile of a County or State road.
2. Were not within two miles of three phase electric power;
3. Did not meet the (County specific i.e. half mile) setback from (County specific uses i.e. - existing residences, churches, businesses and commercially zoned areas);
4. Did not meet the (County specific i.e. half mile) setback from municipalities; and
5. Were situated over the shallow aquifer (if a county has aquifer protection regulations).
6. Did not meet the minimum standards for available water.
7. Did not contain a buildable footprint of at least 40 acres.

After applying the local zoning and buildable footprint requirements to each site, the availability of necessary infrastructure was incorporated into the analysis. The general location of available water, electric and road infrastructure was applied to the remaining sites to establish “Good”, “Better” and “Best” hierarchy of potential development sites. **Table A2** exhibits the minimum requirements necessary for a site to be classified as “Good”, “Better”, or “Best” for **CAFO development**.

**Table A2: CAFO Hierarchy Classification Requirements**

Location Criteria	Description	Good	Better	Best
<b>Roads</b>	Site is <u>adjacent</u> to County/State hard surface road		X	X
	Site is within <u>1 mile</u> of an intersection with a County/State road	X		
<b>Water</b>	Site is <u>adjacent</u> to rural water system area that has both supply <u>and</u> distribution capacity to provide 150,000 gallons per day or 30,000 gallons per day			X
	Site is <u>adjacent</u> to or within rural water system area that has either supply <u>or</u> distribution capacity to serve either 150,000 gallons per day or 30,000 gallons per day		X	
	Site is within <u>2 miles</u> but no closer than <u>½ mile</u> of shallow aquifer in those counties <u>with</u> aquifer protection regulations or Site is within <u>2 miles</u> of shallow aquifer and may be located over shallow aquifer in those counties <u>without</u> aquifer protection regulations	X		
<b>Electricity</b>	Site is <u>adjacent</u> to three phase power			X
	Site is within <u>1 mile</u> of three phase power		X	
	Site is within <u>2 miles</u> of three phase power	X		
<b>Zoning</b>	Site meets county zoning setback requirements	X	X	X
<b>Aquifer</b>	Site meets county aquifer protection regulations (if applicable)	X	X	X
<b>Buildable Parcel</b>	Site contains buildable area of at least <u>40 acres</u>	X	X	X

### **Agriculturally-related Industrial Development (AID)**

The GIS analysis removed all parcels within the county from consideration that:

1. Were not within one mile of a County or State hard surface road.
2. Were not within two miles of three phase electric power;
3. Were not within one mile of rail, if applicable;
4. Were not within one mile of a community or at locations identified by the county
5. Were situated over the shallow aquifer (if a county has aquifer protection regulations).
6. Did not meet the minimum standards for available water.
7. Did not contain a buildable footprint of at least 40 acres.

After applying the required location based site assessment criteria to each site, the availability of necessary infrastructure was incorporated into the analysis. The general location of available water, electric, rail and road infrastructure was applied to the remaining sites to establish “Good”, “Better” and “Best” hierarchy of potential development sites. **Table A3** exhibits the minimum requirements necessary for a site to be classified as “Good”, “Better”, or “Best” **for AID development.**

**Table A3: AID Hierarchy Classification Requirements**

Location Criteria	Description	Good	Better	Best
Roads	Site is <u>adjacent</u> to County/State hard surface road		X	X
	Site is within <u>1 mile</u> of an intersection with a County/State hard surface road	X		
Rail	Site is <u>adjacent</u> to rail facility			X
	Site is within <u>½ mile</u> of rail facility		X	
	Site is within <u>1 mile</u> of rail facility	X		
Water	Site is <u>adjacent</u> to or within rural water system area that has <u>either</u> supply <u>or</u> distribution capacity to serve 410,000 gallons per day or 30,000 gallons per day			X
	Site is adjacent to or within <u>1 mile</u> of rural water system area that has <u>either</u> supply <u>or</u> distribution capacity to serve 410,000 gallons per day or 30,000 gallons per day		X	
	Site is within <u>2 miles</u> but no closer than <u>½ mile</u> of shallow aquifer in those counties <u>with</u> aquifer protection regulations <u>or</u> Site is within <u>2 miles</u> of shallow aquifer and may be located over shallow aquifer in those counties <u>without</u> aquifer protection regulations	X		
Electricity	Site is <u>adjacent</u> to three phase power			X
	Site is within <u>1 mile</u> of three phase power		X	
	Site is within <u>2 miles</u> of three phase power	X		
Zoning	Site is zoned for commercial/industrial development			X
	Site is identified in land use plan for commercial/industrial development		X	
	Site is neither identified or zoned for commercial/industrial development	X		
Proximity	Site is within <u>1 mile</u> of community	X	X	
Aquifer	Site meets county aquifer protection regulations (if applicable)	X	X	X
Buildable	Site contains buildable area of at least <u>40 acres</u>	X	X	X

### Step 3: Site Development Recommendations

Based on the analysis, **408** sites were classified as Good, Better, or Best for CAFO development (**Table A4**) and **168** sites were classified as Good, Better, or Best for AID development (**Table A5**).

While this study only identifies those sites that met the required criteria for the analysis, it should be noted that other sites within the county may be satisfactory for CAFO and AID development. Sites not within the specified distance of a hard surfaced county or state road or does not have desired infrastructure (rail, water, power) within close proximity does not necessarily negate its development potential.

**Table A4:**  
**Turner County CAFO Sites by Hierarchy Classification**

<b>CAFO Site Classification</b>	<b>Good Sites</b>	<b>Better Sites</b>	<b>Best Sites</b>
Low Water CAFO	365	42	1
High Water CAFO	233	14	0

**Table A5:**  
**Turner County AID Sites by Hierarchy Classification**

<b>AID Site Classification</b>	<b>Good Sites</b>	<b>Better Sites</b>	<b>Best Sites</b>
Low Water AID	168	0	0
High Water AID	0	0	0

## **APPENDIX 3: CONTACT INFORMATION**

### **South Eastern Council of Governments**

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South Lincoln Rural Water  
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(605) 372-4211

### **Other Resources - Aquifer**

First Occurrence of Aquifer Materials in Turner County, South Dakota  
Department of Environment and Natural Resources  
Division of Financial and Technical Assistance  
Geological Survey Aquifer Materials Map 36  
Ann Jensen, 2015  
[http://www.sdgs.usd.edu/pubs/pdf/AM-36\\_2015.pdf](http://www.sdgs.usd.edu/pubs/pdf/AM-36_2015.pdf)